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A report of a hybrid offspring between capped langur and Phayre's langur in the state of Assam, India

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Abstract

A hybrid progeny of capped langur *Trachypithecus pileatus* and Phayre's langur *Trachypithecus phayrei* was observed in the Dargakona Tea Estate, Assam, India. The whisker, ventrum, and tail of the hybrid langur were a mixture of both langurs. At the same time, the other characters resembled either of the langurs, indicating the hybridization of the two langurs. A detailed study is suggested to understand their genetic, behavioral, and ecological aspects.

Keywords: Hybrid langur, Indo-Burma, mixed-group species, polyspecies, *Trachypithecus phayrei*

Introduction

The distribution of the endangered Phayre's langur (*Trachypithecus phayrei*) in India is limited in southern Assam, Mizoram, and Tripura (Chetry & Ahmed, 2021) and they share the habitats with capped langur (*Trachypithecus pileatus*). While surveying the primates in southern Assam, a hybrid individual was observed exhibiting the morphological characteristics of both Phayre's langur and capped langur in the Dargakona Tea Estate, bordering the Assam University, Silchar campus, India.

The mixed species group and their hybrid progeny were earlier reported from both old-world and new-world primates (Al-Razi *et al.*, 2023). Kumara *et al.* (2024) reported the mixed troop of Nilgiri langur (*Semnopithecus johnii*) and Hanuman langur (*Semnopithecus hypoleucos*) and Mahato *et al.* (2024) reported the mixed troop of Nilgiri langur (*Semnopithecus johnii*) and tufted grey langur (*Semnopithecus priam*) from the Western Ghats of India. Lu *et al.* (2021) observed the mixed species association of tufted gray langur (*Semnopithecus priam thersites*) with purplefaced langur (*Semnopithecus vetulus philbricki*) and their natural hybrid in Kaludiyapokuna Forest Reserve in Sri Lanka. Choudhury (2008) found a natural hybrid of capped langur (*Trachypithecus pileatus*) and golden langur (*Trachypithecus geei*) in the Zhemgang areas of Bhutan. Aguiar *et al.* (2008) observed the natural hybrid of *Alouatta caraya* and *Alouatta clamitans* in Mata do Bugio, southern Brazil.

Morphological characteristics of the hybrid langur

The Phayre troop consisted of two adult males, four adult females (including the hybrid), two juveniles, and three infants. The identified adult hybrid female in the forest patch of Dargakona Tea Estate had mixed morphological features resembling both the capped langur and Phayre's langur (Figure 1A-I). During the survey, an isolated adult male capped langur was observed at several instances near the Phayres' troop. The dorsum of the capped langur was gray or brownish gray, Phayres' langur was light black, while the back side of the hybrid was blackish to ash grey color, *i.e.*, a mixture of both parents. It was lighter than the adult female Phayre's langur of the troop. The upper ventrum of the male capped was yellowish buff or light yellowish orange in the wet season and golden-yellow or yellowish orange in the dry season. But the lower ventrum of the male capped langur was light yellow and the female capped langur was orange-yellow (Figure 1D-F). The ventrum of Phayre's langur was creamy white irrespective of gender and seasons (1B and 1C) while the abdomen of the

female hybrid langur was observed more like the female capped langur (Figure 1F, 1I).

The crown of the head resembled the cap of capped langur, but it took the color of the cap of Phayre's langur. The fur color on the tail was dark grey, a mixture of both parents. It was darker than the 'father capped' langur and lighter than the mother Phayre's langur. Skin color at the lip regions of the hybrid langur was whitish like phayre's langur, but the color of the white patch was narrower than the color of Phayre's langur. Color of the pupil, iris and sclera of the hybrid langur was black, light orange and the light black while the color of the pupil, iris, and sclera of capped langur was black and orange and the color of the pupil, iris, and sclera of the Phayre's langur was black. The hybrid langur had a distinct white patch around the eyes similar to mother Phayre's langur but the patch was narrower than the mother's. The fur color near the eyes of the hybrid langur was identical to the father-capped langur. The whisker of the hybrid langur was orange at the base and light grey at the terminal part

while the whisker color of capped langur is yellowish-orange and the Phayre's langur is grey to black (Figure 1B, 1D, 1F).

Discussion

Although Phayre's leaf monkey and capped langur are sympatric and habitats often overlap with one another in the region (Choudhury, 1990; Mukherjee, 1994; Feeroz *et al.*, 1995), yet the mixed troop of the two species was not reported in any other case except the study by Al-Razi *et al.* (2023) in northern Bangladesh. The birth of the hybrid individual in the present case can be attributed to the immigration of a male capped langur into the Phayre's troop. One of the major causes of mixed-species troop formation is habitat fragmentation (Detwiler, 2019; Al-Razi *et al.*, 2023). The hybridization as reported here indicates that it is crucial to initiate the conservation of the habitats of the langurs.



Figure 1. Morphological characterization of Phayre's langur (A-C), capped langur (D-F) and the hybrid langur (G-I)

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

DATA AVAILABILITY

Data will be made available upon reasonable request.

AUTHORS' CONTRIBUTION

BS and NRT conceived and designed the study. BS, NRT carried out field study. BS, NRT and ASC analysed the data. BS & ASC wrote the first draft of the MS. PC & NRT reviewed and edited the final draft.

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